CLAIMS

1. A test method for a semiconductor substrate in which pixel cell drive circuits each including a pixel switch and a pixel capacitor that is coupled to the pixel switch and holds pixel data are arranged in a matrix corresponding to intersections between data lines and pixel switch control lines, the method comprising:

a test drive step of selecting two or more of the data lines or two or more of the pixel switch control lines according to an interconnect layout structure on the semiconductor substrate and/or a test item, and applying to each of the selected data lines or each of the selected pixel switch control lines a test drive signal that has a level corresponding to a required logical value, the level being set according to operation expression of logical operation executed in a logical operation step; and

a logical operation step of inputting as a logical value an output of a potential arising in each of the selected two or more data lines or each of the selected two or more pixel switch control lines, and executing logical operation in accordance with operation expression determined according to the layout structure and/or the test item.

2. A semiconductor device comprising, on a
semiconductor substrate:

an image display area in which pixel cell drive
circuits each including a pixel switch and a pixel
capacitor that is coupled to the pixel switch and holds
pixel data are arranged in a matrix corresponding to
intersections between data lines and pixel switch control
lines;

drive means for applying a test drive signal that
has a level corresponding to a required logical value to
each of two or more of the data lines or each of two or
more of the pixel switch control lines, the level being
set according to operation expression of logical
operation executed by logical operation means, the two or
more data lines or the two or more pixel switch control
lines being selected according to an interconnect layout
structure on the semiconductor substrate and/or a test
item; and

logical operation means for inputting as a logical
value, outputs of potentials that arise, due to the
application of the test drive signal, in the two or more
data lines or the two or more pixel switch control lines,
and executing logical operation in accordance with
operation expression determined according to the layout

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structure and/or the test item so as to output a logical operation result.

3. A display comprising:

a semiconductor substrate;

a counter substrate having a common electrode that is disposed to face the semiconductor substrate; and

a liquid crystal layer disposed between the semiconductor substrate and the counter substrate, wherein the semiconductor substrate includes:

an image display area in which pixel cell drive circuits each including a pixel switch and a pixel capacitor that is coupled to the pixel switch and holds pixel data are arranged in a matrix corresponding to intersections between data lines and pixel switch control lines;

drive means for applying a test drive signal that has a level corresponding to a required logical value to each of two or more of the data lines or each of two or more of the pixel switch control lines, the level being set according to operation expression of logical operation executed by logical operation means, the two or more data lines or the two or more pixel switch control lines being selected according to an interconnect layout structure on the semiconductor substrate and/or a test

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item; and

logical operation means for inputting as a logical value, outputs of potentials that arise, due to the application of the test drive signal, in the two or more data lines or the two or more pixel switch control lines, and executing logical operation in accordance with operation expression determined based on the layout structure and/or the test item so as to output a logical operation result.

4. A test method for a semiconductor substrate in which pixel cell drive circuits each including a pixel switch and a pixel capacitor that is coupled to the pixel switch and holds pixel data are arranged in a matrix corresponding to intersections between data lines and pixel switch control lines, the method comprising:

a drive step of driving the data line or the pixel switch control line as a test target with a test drive signal that has a required voltage level; and

a comparison step of comparing an output level of a potential that arises in the data line or the pixel switch control line driven by the test drive signal, with a reference level to which a certain level is assigned, and outputting a comparison result as a logical value.

5. A semiconductor device comprising, on a

semiconductor substrate:

an image display area in which pixel cell drive circuits each including a pixel switch and a pixel capacitor that is coupled to the pixel switch and holds pixel data are arranged in a matrix corresponding to intersections between data lines and pixel switch control lines;

drive means for driving the data line or the pixel switch control line as a test target with a test drive signal that has a required voltage level; and

comparison means for comparing an output level of a potential that arises in the data line or the pixel switch control line driven by the test drive signal, with a reference level to which a certain level is assigned, and outputting a comparison result as a logical value.

6. A display comprising:

a semiconductor substrate;

a counter substrate having a common electrode that is disposed to face the semiconductor substrate; and

a liquid crystal layer disposed between the semiconductor substrate and the counter substrate, wherein the semiconductor substrate includes:

drive means for driving the data line or the pixel switch control line as a test target with a test drive

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signal that has a required voltage level; and

comparison means for comparing an output level of a potential that arises in the data line or the pixel switch control line driven by the test drive signal, with a reference level to which a certain level is assigned, and outputting a comparison result as a logical value.